

**SR-68, 2600 South to I-15 in Davis  
County  
Project No.: SP-STP-0068(21)68E**

**Noise Analysis**

**Utah Department of Transportation  
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Submitted by:

Michael Baker Jr., Inc.  
6955 Union Park Center, Suite 370  
Midvale, UT 84047  
(801) 255-4400

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## 1.0 INTRODUCTION

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A noise analysis was undertaken to identify and evaluate the potential noise impacts of the proposed project. It identifies the basic fundamentals of noise, noise sensitive areas contiguous to the project, impact criteria prescribed by Federal Regulations and the Utah Department of Transportation (UDOT), UDOT recommended analysis procedures specific to this project, and assumptions used for traffic data.

Additionally, it contains quantitative modeling results of the existing, design year No Build, and design year Build Alternative. A comparison of the predicted design year Build Alternative sound level environment is made to the existing and design year No Build environments and to the Federal Highway Administration (FHWA) and UDOT noise abatement criteria. Construction impacts are also described.

Finally, the analysis includes noise abatement consideration measures and those likely to be incorporated in the project, related coordination, and an overall summary. Noise issues for which no prudent solution is reasonably available are also discussed in detail.

## 2.0 FUNDAMENTALS OF SOUND AND NOISE

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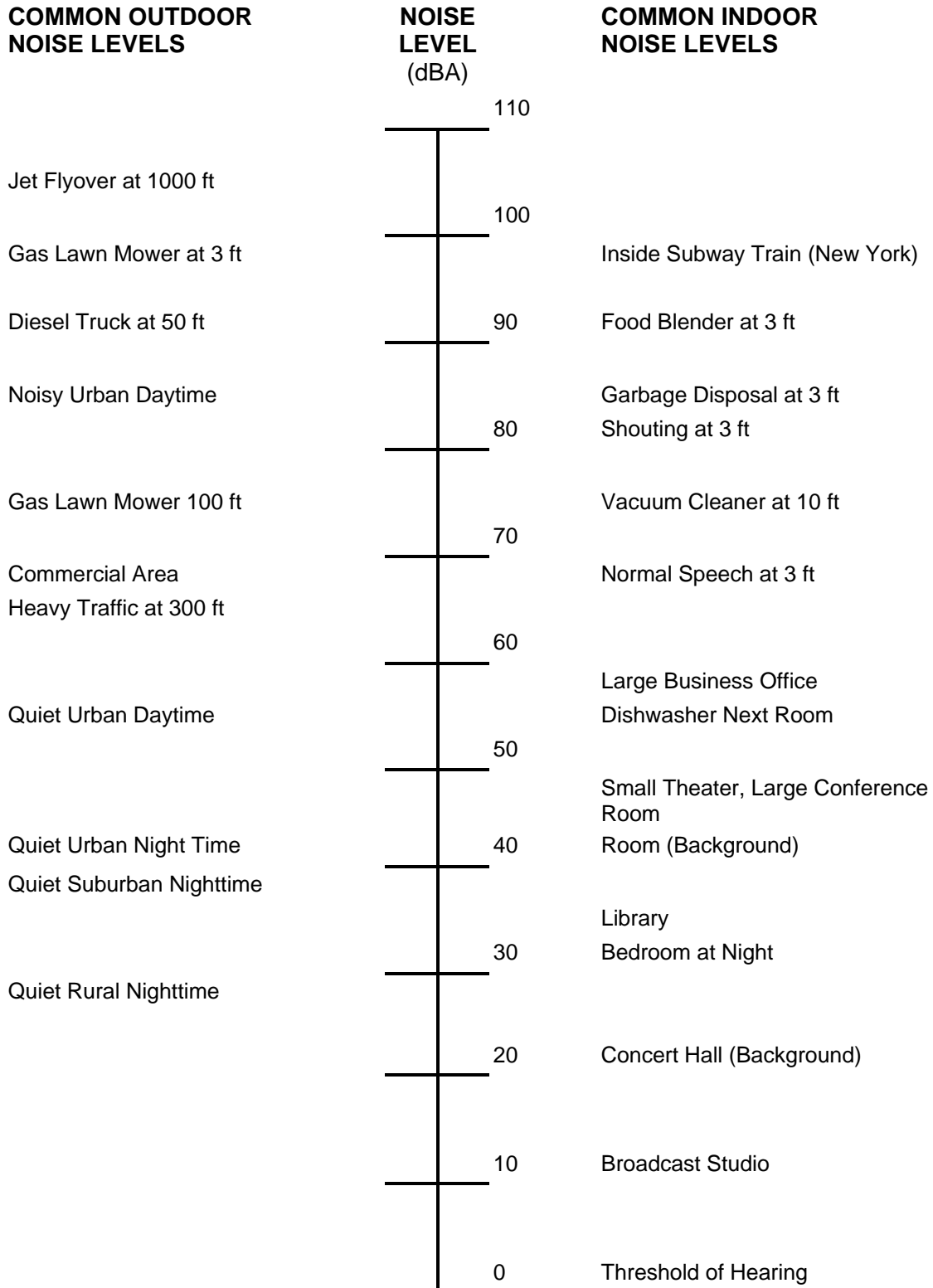
Sound is the vibration of air molecule waves similar to ripples on water. When these vibrations reach our ears, we hear what we call sound. Objects that move back and forth very rapidly, such as vocal chords when we speak produce these waves. The rate at which these objects move is called their frequency. Human ears can only hear sound waves with a frequency between approximately 20 cycles per second and 15,000 cycles per second. The word “noise” is typically defined as unwanted sound.

The loudness of sound is measured in units called decibels (dB). However, since the human ear does not hear sound waves of different frequencies at the same subjective loudness, an adjustment (weighting) of the high- and low-pitched sounds is made to approximate human perception. When such adjustments to the sound levels are made, they are called “A-weighted levels” and are labeled “dBA.” **Figure 1** illustrates some common A-weighted noise levels.

The dBA scale for measuring the intensity of sound is based on the logarithm or sound level pressure relative to a reference pressure. Logarithmic scales are based on powers of ten, not linear like a ruler. Generally, a 3 dBA change is the threshold on which a typical person can hear a change in the sound level environment, a 5 dBA change is considered noticeable and a 10 dBA change in the sound level is equivalent to a doubling (or halving) of the sound level.

Additionally, the level of highway traffic noise is never constant; therefore, it is necessary to use a statistical descriptor to describe the varying traffic noise levels. The equivalent continuous sound level ( $L_{eq}$ ) (h) dBA is the statistical descriptor used in this report. The  $L_{eq}$  sound level is the steady A-weighted sound energy that would produce the same A-weighted sound energy over a stated period of time (1-hour (h), in this case) as a specified time-varying sound.

**Figure 1: Common Outdoor and Indoor Noise Levels**



Source: FHWA, Highway Noise Fundamentals, September, 1980.

### 3.0 LOCAL AREA LAND USES

The land use immediately near the proposed project consists of a sparsely developed mixed use commercial, industrial, residential, and airport. The density is heaviest in the northeastern part of the project area near the I-15 interchange and rather sparse in the western and southwestern area.

### 4.0 NOISE IMPACT CRITERIA

Title 23 of the Code of Federal Regulations Part 772 (23 CFR 772) defines traffic noise impacts as “impacts which occur when predicted traffic noise levels approach or exceed Noise Abatement Criteria (NAC), or when the predicted traffic noise levels substantially exceed the existing noise levels.” **Table 1** shows the UDOT and FHWA Noise Abatement Criteria reflecting UDOT’s approach criteria levels. UDOT identifies an impact if the noise levels at a receptor come within 2 dBA of the NAC in the design year build condition.

Potential substantial increase impacts at sensitive receptors were also analyzed. UDOT’s substantial increase criteria impacts are defined as a 10 dBA (or more) increase over the existing condition. For this project, a typical widening endeavor, there were no substantial increase criteria impacts as a result of the proposed improvements.

**Table 1: Noise Abatement Approach Criteria\***

HOURLY A-WEIGHTED SOUND LEVEL - DECIBELS (dBA)			
Activity Category	L <sub>eq</sub> (h) dBA*	L <sub>10</sub> (h) dBA*	Description of Land Use Category
A	55 (exterior)	58 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	65 (exterior)	68 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	70 (exterior)	73 (exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	-	-	Undeveloped lands.
E	50 (interior)	53 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

*\*Reflects UDOT’s approach criteria levels since a noise impact occurs at this level. Either Leq(h) or L10(h) (but not both) may be used on a project.*

*Note: Tabulated sound levels are threshold values used to define impact and where abatement will be considered. Noise abatement will be designed to achieve a substantial noise reduction - not necessarily achieving the noise abatement criteria.*

*Source: Michael Baker., Jr., Inc., 23 CFR 772, and UDOT.*

## 5.0 NOISE LEVEL MEASUREMENTS

Sound level measurements were made at seven representative sites using a Metrosonics dB-3080 Sound Level Analyzer during peak traffic hours. The calibration of the Sound Level Analyzer was checked with its complementing Metrosonics Acoustical Calibrator before and after each measurement was taken. After samples of the noise level had been collected, the analyzer computed the  $L_{eq}$  noise level for the period during which the samples were collected. The field results are presented in **Table 2**.

Measurements were performed for this project under the direction of current UDOT and FHWA guidance. These field measurements were used to validate and calibrate the model to the predicted field conditions.

**Table 2: Measured Sound Levels**

Monitor Site Number	Land Use	Location	Field Sound Levels		Variance	Dominant Noise Source
			Measured	Modeled		
1	Mixed Residential and Commercial	SR-68 (500 south) near I-15 ramps, Animal Care center, mobile home park and gas station	61	60	+1	SR-68, neighborhood activities, train, distant I-15
2	Mixed Industrial and Recreational	SR-68 (500 south) RV park (now abandoned), refinery	65	64	+1	SR-68, train
3	Residential and Recreational	SR-68 (500 south) near RV park	62	61	+1	SR-68
4	Residential	SR-68, (Redwood Road), Kingston property, just south of 500 S	67	66	+1	SR-68, neighborhood activities
5	Residential	SR-68, (Redwood Road), south of Site 4	62	59	+3	SR-68
6	Residential and airport	SR-68, (Redwood Road), south of 1500 S	60	63	-3	SR-68
7	Residential and airport	SR-68, (Redwood Road), @ airport terminal	62	65	-3	SR-68

Source: Michael Baker Jr., Inc., Sept., 2005

## 6.0 METHODOLOGY

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Estimates of the exterior noise levels at sensitive receptors in the vicinity of the proposed project were based on the FHWA approved Traffic Noise Model (TNM), version 2.5. The modeling predicted the sound levels for the existing year, design year No Build, and design year Build Alternative. In making these estimates, the traffic volume, fleet mix, operating speed, tree shielding, shielding from buildings, terrain, ground zones, and site elevation were considered.

Category B receptors were analyzed as part of this project. These receptors typically include picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.

Typically, commercial and industrial sites (Category C receptors) are not considered sensitive noise sites. These establishments typically do not want to have their visibility blocked from the roadway for business purposes. As a result, proposed mitigation when only in the form of noise barriers, may be unlikely and typically undesired. Title 23 CFR 772.11(a) states that in determining and abating traffic noise impacts, primary consideration is to be given to exterior areas. Abatement will usually be necessary only where frequent human use occurs and a lowered noise level would be of benefit. Additionally, under UDOT R930-3-5 Noise Abatement Conditions (3) (e), Noise abatement is not be planned for Land Use Categories C.

Additionally, where no bonafide exterior sites existed at various Category B or C sites, the Category E criteria were applied. Table 12 (page 117) in the FHWA Highway Noise Fundamentals Training Document identifies the representative outside to inside noise reduction for Category E receptors. For open window scenarios, it is listed as 20 dBA. For closed windows, it is listed as 30 dBA. Since existence or non-existence of windows at these locations, the temperature, the season, and / or personal preference for open / closed windows varies for each location, a conservative 25 dBA value was used as an average between the two suggested values.

Finally, estimates of the 65 and 70 dBA sound level contour were made for the design year Build Alternative for future planning purposes.

## 7.0 ASSUMPTIONS FOR TRAFFIC DATA

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Traffic data was obtained from the traffic analysis SR-68, 2600 South to I-15 in Davis County Traffic Report (Fehr & Peers Associates, Inc., 2006). Traffic information regarding Level of Service C (or better) speeds and volumes was also provided by Fehr and Peers, Inc. (Goeres, September 11, 2006). Paragraph b, Section 772.17 of 23 CFR 772 states that, "in predicting noise levels and assessing noise impacts, traffic characteristics which will yield the worst hourly traffic noise impact on a regular basis for the design year shall be used." Since the level of highway traffic noise is normally related to the traffic volume, the traffic characteristics that yielded the worst hourly traffic noise impact on a regular basis was used.



## 8.0 EXISTING NOISE ENVIRONMENT

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One hundred and thirteen receptors representing all the receptors / dwelling units were modeled in the immediate vicinity of the project corridor. These included second and third row receptors that may potentially be affected by the proposed improvement. Of these sites, approximately 41 are commercial businesses, and the rest are residential dwelling units consisting of single family homes and mobile homes.

There is one receptor that has sound levels that approach, equal, or exceed the UDOT criteria in the existing year. **Table 3** shows the total number of receptors that approach, equal, or exceed the UDOT criteria. Appendix A summarizes the existing sound levels at each receptor.

## 9.0 DESIGN YEAR NO BUILD ALTERNATIVE ENVIRONMENT

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There are thirteen receptors that have sound levels that approach, equal, or exceed the UDOT criteria in the design year No Build condition. These are all single family residences, receptors #20, 34-41, 73, 82, 93, and 95. On average, the increase over the existing condition is about 2 dBA (1-3 dBA range). **Table 3** shows the total number of receptors that approach, equal, or exceed the UDOT criteria. Appendix A summarizes the existing sound levels at each receptor. (Please note that these sound levels are rounded.)

## 10.0 DESIGN YEAR BUILD ALTERNATIVE ENVIRONMENT

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There are eight receptors that have sound levels that approach, equal, or exceed the UDOT criteria in the design year Build condition. These are all single family residences, receptors #20, 34-36, and 38-41. These are the same receptors listed under the no-build alternative minus those receptors that are potentially acquired as part-of the right-of way. **Table 3** shows the total number of receptors that approach, equal, or exceed the UDOT criteria. Appendix A summarizes the existing sound levels at each receptor. (Please note that the sound levels in Appendix A are rounded.)

The average sound level change is approximately 1-2 dBA (0-4 dBA range) over the No Build condition and approximately 3-4 dBA (2-5 range) over the existing year. These sound level changes are primarily the result of a combination of the following variables: minor alignment centerline shifts closer or farther away from noise sensitive sites, the addition of through lane capacity, existing shielding, and the added reflective surface (additional lane, center lane, shoulders, etc.). **Figure 2** and **Figure 3**, located in Appendix B of this report, shows the analyzed receptor sites in the project area.

**Table 3: Receptors that Approach, Equal, or Exceed the NAC**

NAC Category	Existing Year	Design Year 2030 No Build	Design Year 2030 Build*
B	1	13	8
C	0	0	0
E	0	0	0
<u>Total</u>	<u>1</u>	<u>13</u>	<u>8</u>

*\*FHWA / UDOT NAC impacts only. There are no predicted UDOT substantial increase criteria impacts.  
Source: Michael Baker Jr., Inc.*

## **11.0 TRAFFIC NOISE ABATEMENT**

Steps should be taken to ensure that reasonable and feasible abatement measures are incorporated into the plans and specifications. UDOT will typically not approve the environmental documentation and plans and specifications unless such measures are identified and incorporated to reduce or eliminate the noise impact on existing activities, developed lands, or undeveloped lands for which development is planned, designed, and programmed as of the date of environmental approval.

The following noise abatement measures have been considered according to FHWA guidelines at the impacted sensitive receptor locations for Type I noise projects (projects that add capacity) to reduce highway-generated noise impacts. These include traffic management measures, alteration of horizontal and vertical alignments, acquisition of property rights for construction of sound walls, creation of buffer zones, sound insulation for public institutions, and construction of noise barriers or devices (including landscaping for aesthetic purposes) within the highway right-of-way.

### **11.1 TRAFFIC MANAGEMENT MEASURES**

Traffic management in the form of speed reduction, detours, truck restrictions, and exclusive lane designations is not practical abatement for this project. Speed reduction is not considered effective because of enforcement demands and the speeds are reduced as the traffic volumes get nearer to I-15. Additionally, truck detours and restrictions are not reasonable because it is an important arterial route. As a result, it would not help to serve the need to move people, goods, and services in the area. Exclusive lane designations for trucks and buses are also not effective for this project because making every heavier / louder vehicle use the right lane exclusively would move this sound level generation closer to the sensitive receptors.

### **11.2 ALTERATION OF HORIZONTAL AND VERTICAL ALIGNMENTS**

Modifications to the horizontal and vertical alignment would be bound by the engineering limitations required within the relative and reasonable right-of-way (existing and proposed) and the existing corridor that the project currently occupies.

Horizontal modifications to reduce sound levels at impacted locations would require large shifts in the alignment, potential changes to the super-elevation, and would require a realignment of the cross-streets for proper approach angles, taking even more property. In addition to the property acquisition, this would also require removing more buildings, which act as noise shielding for some residences in the study area that are farther removed from the immediate roadway. The location of the rail lines would also constrain any potential shifts.

Vertical alignment alteration was also not considered to be a feasible noise abatement measure. Depressing the roadway would also entail impacts similar to horizontal changes, such as property acquisition to maintain proper slopes and cross-street connections. There would also be probable conflicts with utilities and water features. Elevating the roadway would only propagate the sound levels deeper into the residential areas and would reduce the effect of right-of-way shielding from the existing landscape or buildings.

### **11.3 ACQUISITION PROPERTY RIGHTS FOR BARRIER CONSTRUCTION**

No additional property for any proposed barrier construction is foreseen at this time. The preliminary analysis indicates that construction of noise barriers is not feasible. If this condition changes, then the mitigation analysis would be reviewed to see if it creates a situation where additional land is needed. Otherwise, it is anticipated that any planned reasonable and feasible barriers would be accommodated within the proposed right-of-way.

### **11.4 CREATION OF BUFFER ZONES**

The project corridor immediately near SR 68 is a mix of commercial, residential and industrial land uses. Where active commercial or non-residential building areas already exist, then a buffer is already present to shield sensitive sites farther away from SR 68. Where abutting residential or other sensitive areas exist, it is unlikely that commercial activities will be proposed in these areas and buffer zones cannot be proposed. For non-planned or non-permitted undeveloped land, it is suggested that commercial development be proposed in future land use zoning to create a buffer zone between SR 68 and sensitive areas. It is also suggested that proposed residential subdivisions be placed farther from the road to avoid potential sound level matters.

In an effort to help create a buffer zone for future planning purposes of undeveloped land, the worst-case 65 and 70 dBA contours for the build alternative were developed. **Table 4** shows these distances. The distances are from the proposed roadway centerline and are a straight-line distance estimate for planning purposes only. They do not take into account sound level variations as a result of numerous local sound wave changing dynamics such as building shielding, terrain, trees, private fence structures, and ground zone changes (such as parking lots, for example). It does, however, incorporate the effects of the additional noise reflective pavement proposed from the construction of the center turning lane and shoulders, as applicable. Additionally, the distances are rounded to the nearest 10 feet for planning convenience purposes.

**Table 4: Worst-Case 65 and 70 dBA Contour Distances\* (in feet)**

<b>Year 2030 Build Alternative</b>	<b>Redwood Road:</b>		<b>500 South:</b>	
	<b>2600 South to 1500 South</b>	<b>1500 South to 500 South</b>	<b>Redwood Road to 1100 West</b>	<b>1100 West to I-15</b>
<b>65 / 70 dBA contour distances</b>	180/100	170/90	120/60	80/40

Notes:

*\* Distance measured from the proposed roadway centerline, rounded to the nearest ten feet, varies slightly based on typicals. This is a straight-line estimate for planning purposes only. It does not take into account sound level variations as a result of numerous local sound wave changing dynamics such as building shielding, terrain, trees, private fence/wall structures, and ground zone changes. It does, however, incorporate the effects of the additional noise reflective pavement proposed from the construction of center turning lanes and shoulders, as applicable.*

Source: Michael Baker Jr., Inc.

## **11.5 SOUND INSULATION FOR PUBLIC INSTITUTIONS**

There are zero (0) public institutions that meet this criteria. Therefore, no further analysis is required for this type of abatement.

## **11.6 NOISE BARRIERS**

UDOT is committed to providing feasible and reasonable noise abatement as a result of highway traffic noise. In determining this feasibility and reasonableness, appropriate consideration shall be given to Utah Administrative Code Rule R930-3, Highway Noise Abatement, and the June 1995 Policy and Guidance issued by the Federal Highway Administration regarding, "Highway Traffic Noise Analysis and Abatement."

A key measure of feasibility states that a noise barrier shall reduce traffic noise levels generated on the facility by a minimum insertion loss of 5 dBA at the closest receptor(s). An insertion loss is defined as a decibel level reduction (loss) from an insertion of a barrier between the roadway and the sensitive receptors.

This minimum reduction is not achievable for any impacted location, primarily because driveway access points had to be maintained. Subsequently, resulting 'gaps' in proposed barriers would render them ineffective (not feasible) in an effort to meet the minimum goal of 5 dBA. There would also be the need to maintain line-of-sight safety requirements (sight triangles) in these cases.

The mitigation consideration assessments are discussed in **Table 5**. Additionally, areas that were deemed to not be feasible under UDOT policy are also discussed.

**Table 5. Preliminary Noise Abatement Mitigation Summary**

RECEPTORS	EVALUATION COMMENTS
#20-Residence; southbound side of Redwood Road, located immediately south of the proposed and approved Mountain View Estates	This single impacted residence has direct access to SR68. Driveway access would need to be maintained and a continuous noise barrier would restrict access to these receptors. A gap in the noise barrier would satisfy the access requirements but the resulting non-continuous segments would not be sufficient to achieve the minimum feasible reduction of 5 dBA for the impacted receptor. There would also be safety line-of-sight requirements for the access point.
#34-36 and 38-41 - Residences; southbound side of Redwood road, just south of the 500 South intersection.	The eight impacted residences are served with six driveway/access points to SR68. Driveway access would need to be maintained and a continuous noise barrier would restrict access to these receptors. Gaps in a noise barrier would satisfy access requirements but the resulting non-continuous segments would not be sufficient to achieve the minimum feasible reduction of 5 dBA for the impacted receptor. There would also be safety line-of-sight requirements for the numerous access points.

*Source: Michael Baker Jr., Inc.*

## 11.7 CONCLUSIONS

In accordance with UDOT's noise policy, noise abatement walls are not proposed for this project due to the following reasons. Generally:

- The minimum decibel reduction goal of 5 dBA can not be achieved at any impacted location.
- Direct access to driveways and cross-streets must be maintained and can not be restricted with noise barriers placed across these ingresses and egresses.
- Line-of-sight safety requirements must be maintained and can not be compromised for those vehicles that would be turning from the driveways and/or side streets onto SR 68.

## 12.0 CONSTRUCTION NOISE ABATEMENT

The potential for temporary increases in the sound level environment because of construction activities is expected to occur at the studied receptor sites. Although temporary, there will be occurrences where construction noise is perceptible to the general public. This analysis is consistent with Federal Regulation 23 CFR 772 - Procedures for Abatement of Highway Traffic Noise and Construction Noise and Utah Code 72-6-111 and 112.

Generally, the control, timing, and phasing of construction noise will be governed by UDOT construction specifications. The project falls within a "noise sensitive zone" (the land enclosed within a 1,500 foot radius circle of any receptor) as defined by UDOT construction standard specification Section 01355 (Environmental Protection) Part 1.8 Noise and Vibration Control. This specification states that the contractor will be required to prohibit construction activity in a

noise sensitive zone if the sound level within 10 feet of the nearest receptor exceeds 95 dBA in daytime (from 7 am to 9 pm) or 55 dBA in nighttime (from 9 pm to 7 am), as well as Sundays and State Holidays.

Construction noise levels would not be continuous for any given receptor but would be intermittent and vary by location. For example, a receptor may experience noise due to removal / excavation, drainage installations, and paving operations at different timeframes during the construction. Furthermore, these disruptions could occur while these activities are performed in a northbound direction, and then again for construction in the southbound direction. These individual disruptions should be for a limited period of time. **Table 6** shows the typical sound levels for construction equipment normally used in highway construction operation.

**Table 6: Typical Construction Equipment Noise**

<b>Equipment</b>	<b>Typical Noise Level (L<sub>eq</sub> dBA) 50 Feet from Source</b>
<i>Earth Moving</i>	
Front Loader	85
Back Hoe	80
Dozer	85
Scraper	89
Grader	85
Truck	88
Paver	89
Scarifier	83
Shovel	82
<i>Materials Handling</i>	
Concrete Mixer	85
Concrete Pump	82
Crane, Mobile	83
Crane, Derrick	88
<i>Stationary</i>	
Pump	76
Generator	81
Air Compressor	81
<i>Impact</i>	
Pile Driver (Impact)	101
Pile Driver (Sonic)	96
Jackhammer	88
Rock Drill	98
<i>Other</i>	
Saw	76
Vibrator	76
Compactor	82
Pneumatic Tool	85
Roller	74

Source: EPA, Northeast Corridor Improvement Project and other measured data.

## **APPENDIX A**

### **PREDICTED EXTERIOR SOUND LEVELS (dBA) EXISTING AND DESIGN YEAR CONDITIONS**

Receptor # and Location	2005 Noise Level	2030 No Build Noise Levels	2030 Build Noise Levels 110' (94')	Reasonable and Feasible Abatement?
1-Strip Businesses NB Redwood Road	63	65	68	N/A
2-Residence-SB Redwood Road	56	58	61	N/A
3-Residence-SB Redwood Road	58	60	61	N/A
4-Strip Businesses near Airport	63	65	68	N/A
5-Airport Warehouses	*	*	*	*
6-Townhouses: Valentine Estates	59	60	61	N/A
7-Townhouses: Valentine Estates	58	60	60	N/A
8-Townhouses: Valentine Estates	54	55	56	N/A
9-Townhouses: Valentine Estates	53	55	55	N/A
10-Residence: Valentine Estates	62	63	63	N/A
11-Residence: Valentine Estates	58	60	60	N/A
12-Residence: Valentine Estates	55	56	57	N/A
13-Residence: Valentine Estates	52	54	55	N/A
14-Residence: Valentine Estates	51	53	54	N/A
15-Contour Composites	*	*	*	*
16-Clem's Closeout	*	*	*	*
17-General Masonry	*	*	*	*
18-Recreation Performance Motorsports	*	*	*	*
19- Nelson Diesel	*	*	*	*
20-Residence: SB Redwood Road	63	65	65	No
20A-Residence: Mtn. View Estates	57	59	60	N/A
20B-Residence: Mtn. View Estates	52	54	54	N/A
21- Residence: SB Redwood Road	59	61	61	N/A
21A-Residence: Mtn. View Estates	53	54	54	N/A
22- Residence: Mtn. View Estates	59	61	61	N/A
23- Residence: Mtn. View Estates	59	61	61	N/A
23A-Residence: Mtn. View Estates	52	54	54	N/A
24- Residence: Mtn. View Estates	59	61	61	N/A
25- Residence: Mtn. View Estates	59	61	61	N/A
25A-Residence: Mtn. View Estates	55	57	57	N/A
26- Residence: Mtn. View Estates	59	61	61	N/A
27- Residence: Mtn. View Estates	59	60	61	N/A
27A-Residence: Mtn. View Estates	54	56	57	N/A
27B-Residence: Mtn. View Estates	55	57	57	N/A

\* 23 CFR 772 Maximum noise levels do not apply to service stations, industrial areas, storage areas and other areas having limited human use or where lowered noise levels would produce little benefit.

Note1: Shaded areas indicate receptors that equal or exceed UDOT's approach criteria for either NAC B (65 dBA) or NAC C (70 dBA) categories. There are zero (0) predicted substantial increase criteria impacts.

Note2: Sound level values are rounded off.

N/A = Not Applicable because the predicted sound levels are not meeting the impact criteria for noise abatement consideration.

R/W = Potential Right of Way acquisition.



Receptor # and Location	2005 Noise Level	2030 No Build Noise Levels	2030 Build Noise Levels 110' (94')	Reasonable and Feasible Abatement?
28 - Maverick Country Store	54	56	58	N/A
29 - Woods Cross City Shop	62	64	67	N/A
30-Bikesellerz	54	56	59	N/A
31-Residence SB Redwood Road	61	63	64	N/A
32-AAA Summit Storage	*	*	*	*
33-Commercial Business	57	59	63	N/A
34-Residence SB Redwood Road	63	65	68	No
35-Residence SB Redwood Road	63	65	66	No
36-Residence SB Redwood Road	63	65	66	No
37-Residence (also Business) SB Redwood Road	66	68	R/W	R/W
38-Residence SB Redwood Road	64	66	66	No
39-Residence SB Redwood Road	64	66	66	No
40-Residence SB Redwood Road	64	66	67	No
41-Residence SB Redwood Road	64	66	67	No
42-Auto Auction	*	*	*	*
43-Auto Barn	*	*	*	*
44-Kiingsbury Farm Horses	56	59	61	N/A
45- Residence EB 500 South	50	53	56	N/A
46- Residence EB 500 South	52	55	57	N/A
47- Residence EB 500 South	50	53	55	N/A
48 - B&L Storage	*	*	*	*
49- Westwood Mobile Home Park	60	62	63	N/A
50- Westwood Mobile Home Park	54	57	57	N/A
51- Westwood Mobile Home Park	52	55	55	N/A
52- Westwood Mobile Home Park	59	62	62	N/A
53- Westwood Mobile Home Park	54	57	57	N/A
54- Westwood Mobile Home Park	53	56	56	N/A
55- Westwood Mobile Home Park	58	61	62	N/A
56- Westwood Mobile Home Park	55	58	58	N/A
57- Westwood Mobile Home Park	52	55	55	N/A
58- Westwood Mobile Home Park	59	62	62	N/A
59- Westwood Mobile Home Park	53	56	56	N/A
60- Westwood Mobile Home Park	60	62	62	N/A
61- Westwood Mobile Home Park	59	62	62	N/A

\* 23 CFR 772 Maximum noise levels do not apply to service stations, industrial areas, storage areas and other areas having limited human use or where lowered noise levels would produce little benefit.

Note1: Shaded areas indicate receptors that equal or exceed UDOT's approach criteria for either NAC B (65 dBA) or NAC C (70 dBA) categories. There are zero (0) predicted substantial increase criteria impacts.

Note2: Sound level values are rounded off.

N/A = Not Applicable because the predicted sound levels are not meeting the impact criteria for noise abatement consideration.

R/W = Potential Right of Way acquisition.

Receptor # and Location	2005 Noise Level	2030 No Build Noise Levels	2030 Build Noise Levels 110' (94')	Reasonable and Feasible Abatement?
62- Westwood Mobile Home Park	60	62	62	N/A
63- Westwood Mobile Home Park	59	62	62	N/A
64- Westwood Mobile Home Park	60	62	62	N/A
65- Westwood Mobile Home Park	59	62	62	N/A
66- Westwood Mobile Home Park	53	56	56	N/A
67- Westwood Mobile Home Park	59	62	62	N/A
68- Westwood Mobile Home Park	54	57	58	N/A
69- Westwood Mobile Home Park	52	55	56	N/A
70-Residence EB 500 South	58	61	62	N/A
71-America's Country Store	55	58	60	N/A
72-Trucking / Shipping Business	*	*	*	*
73- Residence WB 500 South	63	66	R/W	R/W
74-Rodell Storage	*	*	*	*
75-Residence EB 500 South	61	64	66	N/A
76-Hugoe Trucking	58	61	65	N/A
77-Dave Auto Sales	*	*	*	*
78-Gas Station/Car Wash	*	*	*	*
79- Salt Lake Imports	56	58	61	N/A
80-Alta Vista Trees	61	64	65	N/A
81-Gilbert & Sons Electrical	60	62	64	N/A
82-Residence EB 500 South	63	65	R/W	R/W
83-Century Auto Sales	*	*	*	*
84-Residence WB 500 South	61	63	R/W	R/W
85-Flanders Hauling (For Sale or Lease)	*	*	*	*
86-Residence EB 500 South	61	63	R/W	R/W
87-Grandview Rockery	*	*	*	*
88-Grandview Rockery	*	*	*	*
89-Residence EB 500 South	60	62	64	N/A
90-Jensons Auto Repair	*	*	*	*

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Note2: Sound level values are rounded off.

N/A = Not Applicable because the predicted sound levels are not meeting the impact criteria for noise abatement consideration.

R/W = Potential Right of Way acquisition.

Receptor # and Location	2005 Noise Level	2030 No Build Noise Levels	2030 Build Noise Levels 110' (94')	Reasonable and Feasible Abatement?
91-Ralph Smith / JB Tire	*	*	*	*
92-Residence EB 500 South	62	64	R/W	R/W
93-Residence EB 500 South	63	65	R/W	R/W
94-TRW Auto Parts	*	*	*	*
95-Residence WB 500 South	64	65	R/W (R/W)	R/W
96-Commercial Business	63	64	R/W (68)	N/A
97-Residence WB 500 South	63	64	R/W (R/W)	R/W
98-Bountiful Collision	*	*	*	*
99-West Bountiful Business Park	63	64	68 – Some R/W (68)	N/A
100-Holly Energy	60	61	62 (62)	N/A
101-RMI Auto Brokers	*	*	*	*
102-DRs Auto Service & Barber Shop	*	*	*	*
103-Animal Care Center	56	58	60	N/A
104-Phillips 66	*	*	*	*
105- Wood Haven Mobile Home Park	59	60	63	N/A
106- Wood Haven Mobile Home Park	54	55	57	N/A

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Note1: Shaded areas indicate receptors that equal or exceed UDOT's approach criteria for either NAC B (65 dBA) or NAC C (70 dBA) categories. There are zero (0) predicted substantial increase criteria impacts.

Note2: Sound level values are rounded off.

N/A = Not Applicable because the predicted sound levels are not meeting the impact criteria for noise abatement consideration.

R/W = Potential Right of Way acquisition.

## **APPENDIX B**

### **FIGURE 2**

### **FIGURE 3**